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55 ST-JACQUES, MONTRÉAL,
QUÉBEC, CANADA H2Y 3X2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: Jean-Louis BÉLIVEAU

Patent Application no. 09/598,956

Filed on 22 June 2000

LETTER

Title: STACKABLE CONSTRUCTION PANEL

Group art unit: 3635

O/Ref.: 27266-0024

TO THE COMMISSIONER OF PATENTS
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Sir,

Enclosed please find a certified copy of the priority document CA 2,298,170 of
11 February 2000 and concerning the above-identified patent application.

RESPECTFULLY SUBMITTED

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attached hereto and identified below are
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the Patent Office.

Specification and Drawings, as originally filed, with Application for Patent Serial No:
2,298,170, on February 11, 2000, by POLYFORM A.G.P. INC., assignee of Jean-Louis
Béliveau, for "Stackable Construction Panel".

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S. Gregoire
Agent certificateur/Certifying Officer

June 20, 2000

Date

Canada

(CIPO 68)

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CIPO

**STACKABLE CONSTRUCTION PANEL****FIELD OF THE INVENTION**

The present invention relates generally to wall forms of the type comprising pairs of opposed form walls each formed of a plurality of stacked rows of plastic
5 foam panels for receiving flowable materials such as concrete. More particularly, it relates to interlocking foam panels or blocks used to build those form walls.

BACKGROUND OF THE INVENTION

A number of different systems and methods currently exists for making insulating forms for casting a concrete wall. Often, these systems comprise pairs
10 of opposed foam panels generally made of a rigid foam like polystyrene which define concrete-receiving cavities therebetween. Those pairs of foam panels are placed one above the other so to form the wall form. Once the concrete is solidified, the form walls remain in place to insulate the wall. Those form walls are typically maintained in spaced and parallel relationship before the pouring
15 of concrete by means of connectors comprising a pair of parallel lateral attachment flanges each embedded in one of the two opposed foam panels, and a connecting web interconnecting the flanges.

The piling up of such panels is performed on the site of construction. One object in this field is to obtain foam panels that would allow, on one hand, an easy and
20 very rapid piling up without loosing time and, on the other hand, would allow construction of a stable and solid stacking that will not likely disassemble prior to the pouring of concrete. As can be easily understood, as soon as the concrete is poured, the chance that the stack collapse or disassembled is greatly reduce.

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An example of a prior art attempt in this field is given in US 5,428,933 which discloses an insulating construction panel having a top and a bottom edge each provided with interconnecting members consisting of at least two rows of alternating projections and recesses interconnecting. The recesses of one row is adjacent to a projection of the other row, such as a checkerboard, whereby the insulation panel can be interconnected with a like member in a bi-directional or reversible manner. One drawback encounters with such a panel is that the projections at the corners and along the edges tend to break easily.

There is thus still presently a need for an improved insulating construction panel for building form walls.

SUMMARY OF THE INVENTION

An object of the present invention is to propose an interlocking insulating construction panel that will satisfy the above-mentioned need, and more particularly to propose an improved panel that is interconnectable with a like panel in a reversible manner.

In accordance with the present invention, that object is achieved with an interlocking insulating foam panel having a top side and a bottom side each provided with a median row of alternating projections and recesses, the median row being disposed between two planar edge surfaces having the same elevation, each projection of the top side being opposed to a recess of the bottom side whereby the top side and/or the bottom side of the panel can be interconnected with either the top side or the bottom side of a like panel.

The present invention also concerns a wall form assembly comprising opposed foam panels, as described above, disposed in parallel relationship to make a wall form for receiving a flowable material such as concrete and a plurality of

connectors for tying the opposed foam panels together. More particularly, the form wall assembly comprises:

- a first and a second opposed foam panels in parallel relationship; and
- 5 - a plurality of connectors hingely tying together the first and second foam panels, whereby the tied foam panels are movable between an extended position where the foam panels are spaced-apart to make the form and a collapsed position where the foam panels are brought close to each other, and wherein
- 10 - each of the first panel and the second panel has a top side and a bottom side each provided with a single median row of alternating projections and recesses, the median row being disposed between two planar edge surfaces having the same elevation, each projection and recess of the top side of one panel being opposed respectively to a recess and a projection of the bottom side of the same panel and
- 15 facing a recess of the other panel when the panels are in the extended position whereby the panels in the extended position can be interconnected with a like pair of panels.

Other features and objects of the present invention will become more apparent from the description that follows of a preferred embodiment, having reference
20 to the appended drawings and given as examples only as to how the invention may be put into practice.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective fragmentary view of a form wall assembly according to a preferred embodiment of the present invention;

Figure 2 is a top view of the form wall assembly of figure 1 showing the relief of the top side of the foam panels;

Figure 3 is a cross-sectional side elevational view of the left panel of the form wall assembly of figure 1 along line III-III showing also the top side of a lower
5 panel;

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring to figure 1, a form wall assembly (10) according to the present invention is suitable to make a form for receiving flowable materiel such as concrete. The form obtained is of the type comprising a plurality of stacked
10 horizontal rows of coplanar substantially rectangular foamed plastic panels (14) abutting one another along horizontal and vertical sides thereof. More particularly, the form wall assembly (10) comprises a first foam panel (14a) opposed to a second foam panel (14b) in spaced and parallel relationship, and tied together by means of a plurality of connectors (16), as best seen in figure
15 2. The foam panels (14) are movable between an extended position, as shown in figure 1, where the foam panels (14) are spaced-apart to make the form and a collapsed position, not illustrated, where the foam panels (14) are brought close to each other, mainly for shipping purposes.

The foam panels (14) each have a top side (15) opposite a bottom side (17)
20 and, as illustrated in figures 1 and 2, each of the top side (15) and the bottom side (17) is provided with a median row (13) of alternating projections (18) and recesses (19). This median row (13) is disposed between two planar surfaces (20) having the same elevation and bordering the edges of the panel (14). Each projection (18) and recess (19) of the top side (15) of one panel (14a) is
25 opposed respectively to a recess (19) and a projection (18) of the bottom side (17) of the same panel (14a), and is facing respectively a recess (19) and a projection (18) of the top side (15) of the other panel (14b), when the pair of

panels (14a and 14b) are in the extended position as in figure 1 or 2, whereby the pair of panels (14a, 14b) can be interconnected with a like pair of panels.

Although not completely illustrated, each connector (16) preferably comprises a pair of anchor members, a first one embedded in the first foam panel (14a) and the second one embedded in the second foam panel (14b). Each anchor member has an elongated flange plate extending longitudinally and deep inside the foam panel (14) and an elongated link element connected longitudinally to the flange plate and having a projecting end (23) coming out of the foam panel (14). Preferably, the projecting end (23) of each anchor member comprises a stabilising plate parallel to the flange plate and extending flush with the inner surface of the foam panel.

It has to be noted that by saying that the anchor member is embedded in the foam panel, a person in the art will understand that in the making of the foam panel (14) in the manufacturing plant, the plastic foam material forming the panel (14) is injected to surround the anchor member (22), thereby strengthening the joint between the panel (14) and the anchor member (20) which thus act as an anchor forming part of the foam panel (14). More specifically, the plastic foam material, which is preferably a polystyrene, is injected to surround the anchor member (20).

Referring to figures 1 and 2, the connector (16) further comprises a web member (24) extending between the foam panels (14). The web member (24) which is preferably made of a relatively flexible plastic comprises a central portion having a shape adapted to receive and hold metal rods used to reinforce the concrete. The web member (24) further has a first longitudinal side end (26a) hingedly connected to the projecting end (23) of the first anchor member and a second longitudinal side end (26b) opposed to the first longitudinal side end (26a). The second longitudinal side end (26b) is hingedly connected to the

projecting end (28) of the second web member (24b). The foam panels (14) are movable between an extended position, as shown in figure 1, where the foam panels (14) are spaced-apart to make the form and a collapsed position, not illustrated, where the foam panels (14) are brought close to each other, mainly
5 for shipping purposes.

Therefore, thanks to both the relief of the top and bottom sides of the panels (14) and the connectors (16), the wall form assemblies according to the illustrated preferred embodiment of the present invention can be easily stacked over each other and linked together.

10 Once a form for receiving flowable material is mounted using a plurality of stacked horizontal rows of form wall assemblies, the empty cavity existing between the form wall made of isolating and rigid panels (14) is filled with concrete or with cement based grout. After hardening of the filling material, a composite wall is obtained with the isolating panels firmly attached through the
15 connectors to the concrete inside-wall.

Although a preferred embodiment of the invention has been described in detail herein and illustrated in the accompanying drawings, it is to be understood that the invention is not limited to this precise embodiment and that various changes and modifications may be effected therein without departing from the scope or
20 spirit of the invention.

CLAIMS

1. A stackable insulating foam panel having a top side and a bottom side each provided with a median row of alternating projections and recesses, the median row being disposed between two planar edge surfaces having the same elevation, each projection of the top side being opposed to a recess of the bottom side whereby the top side and/or the bottom side of the panel can be interconnected with either the top side or the bottom side of a like panel.
2. A wall form assembly for receiving a flowable material comprising:
 - a first and a second opposed foam panels in parallel relationship; and
 - a plurality of connectors hingely tying together the first and second foam panels, whereby the tied foam panels are movable between an extended position where the foam panels are spaced-apart to make the form and a collapsed position where the foam panels are brought close to each other, and wherein
- each of the first panel and the second panel has a top side and a bottom side each provided with a single median row of alternating projections and recesses, the median row being disposed between two planar edge surfaces having the same elevation, each projection and recess of the top side of one panel being opposed respectively to a recess and a projection of the bottom side of the same panel and facing a recess of the other panel when the panels are in the extended position whereby the panels in the extended position can be interconnected with a like pair of panels.

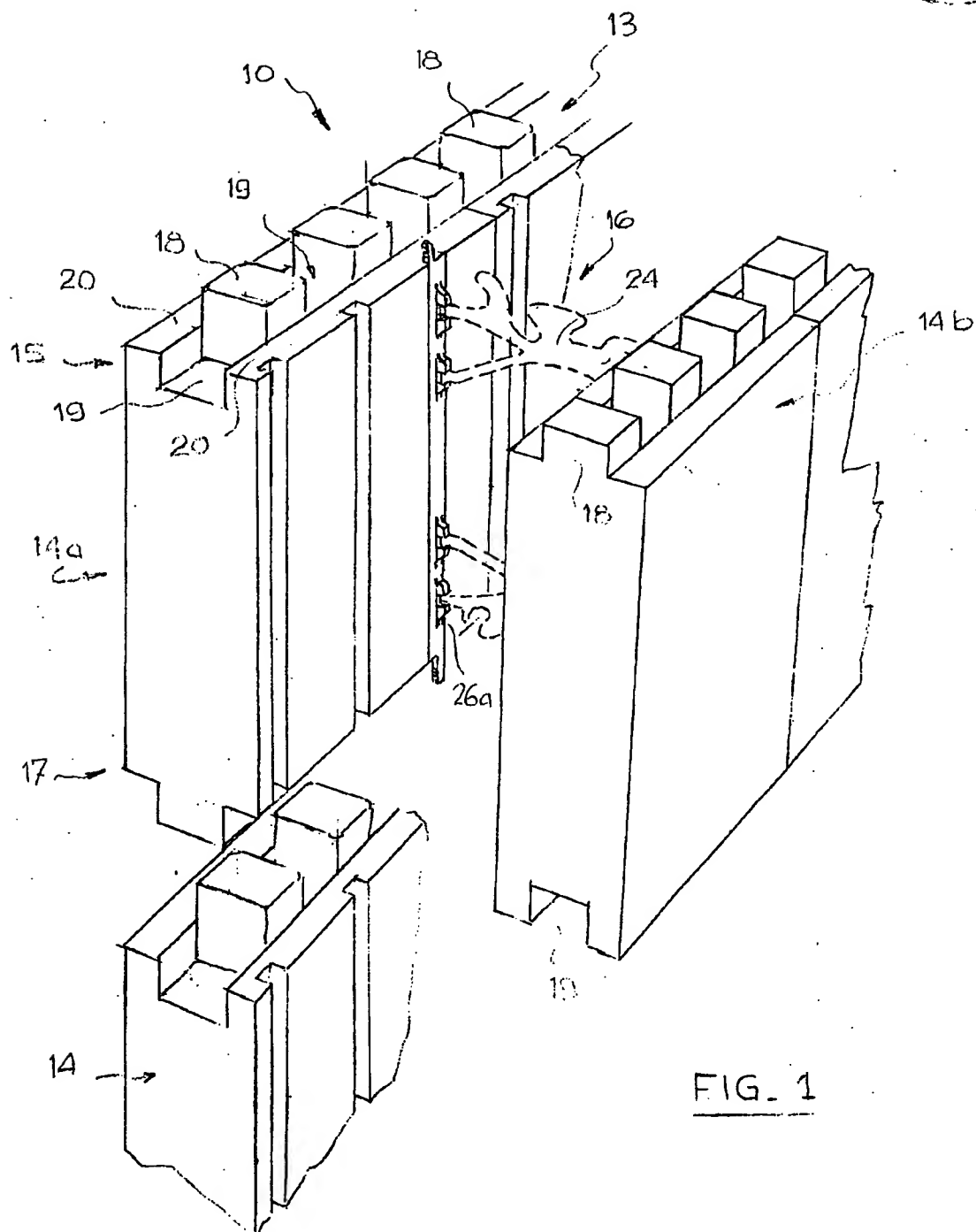


FIG. 1

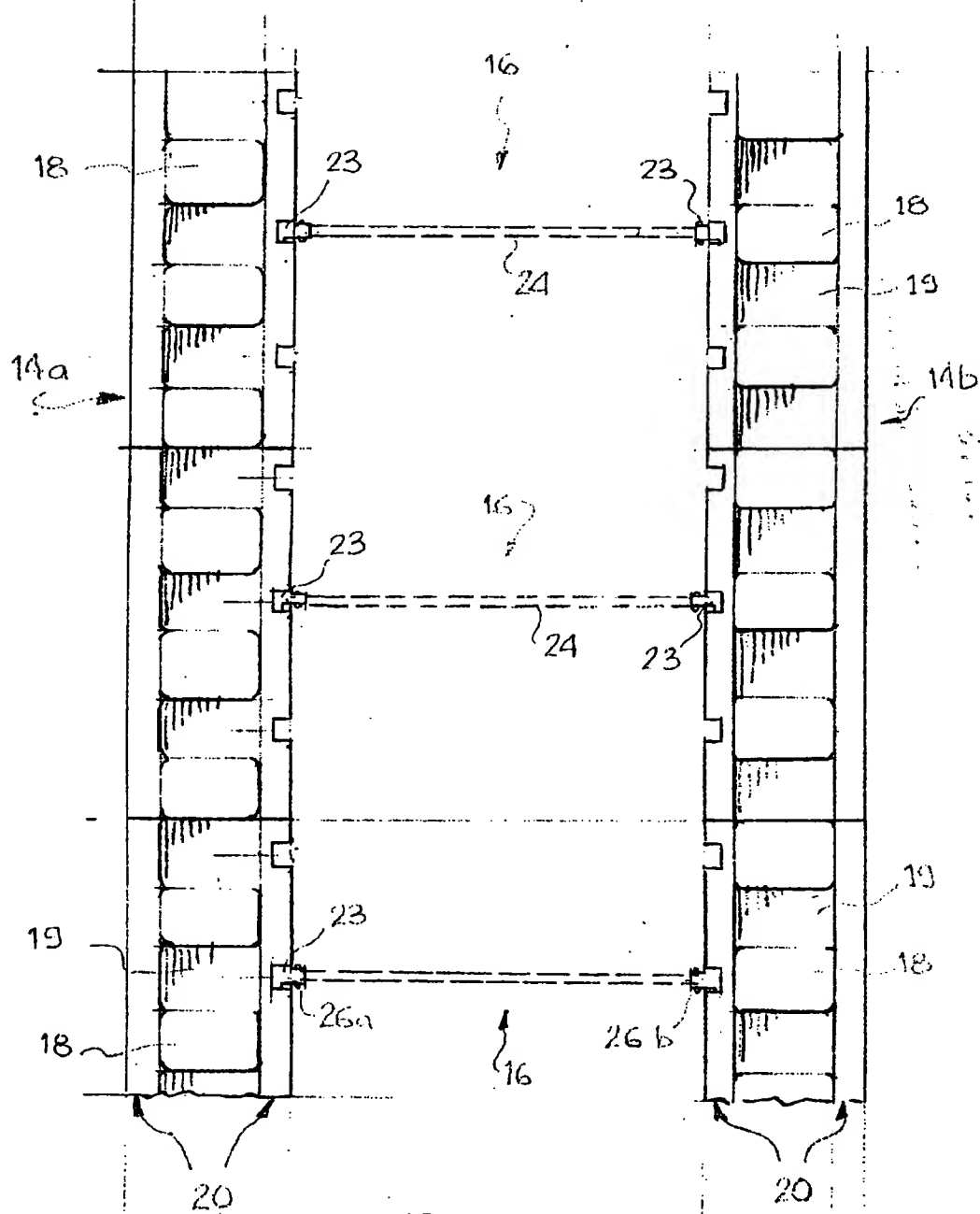


FIG. 2

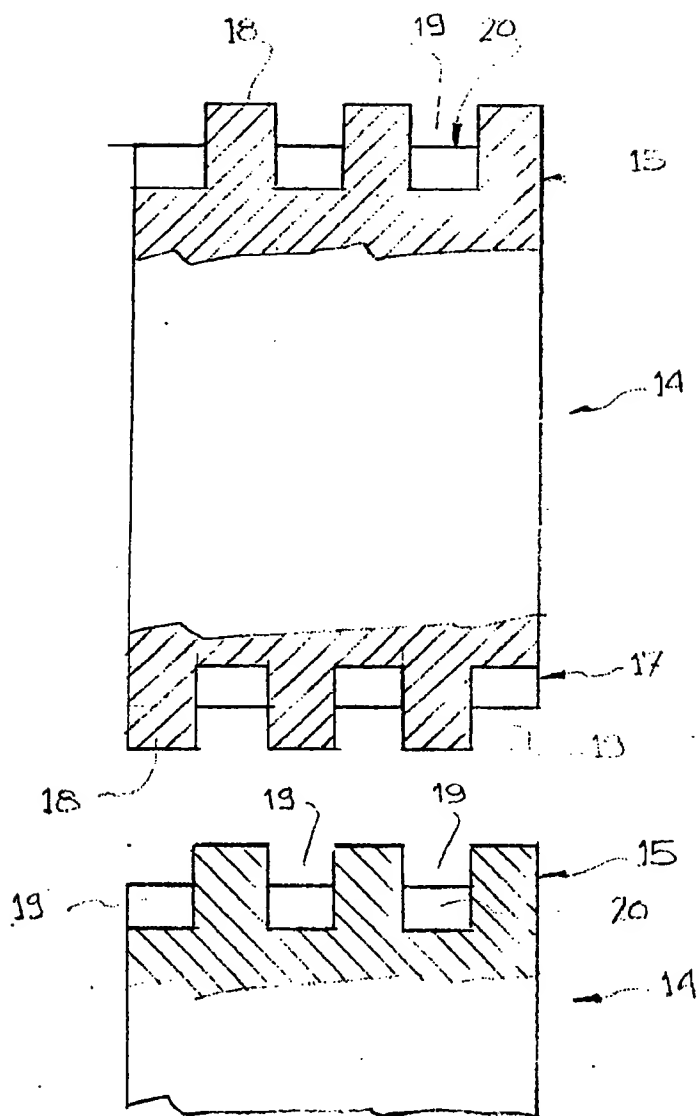


FIG. 3